Figure 1A of 4

))))	TGT	CTC	TCG	AGG	ATA	999
GCT			CTG	CCG TAC ATC AAG GCC TTT TAC AAT GAG TCA TGG GAA AGA AGG	TCC	GTG GGG ACG TTA ATT GTG AAG ATG ATT GGA AAG GTT CTT GGG
TCA	AGC CAC GCC GGG CCT CCA GGG CCA GGG AGG GCA CTG CTG GAG	CCA GGT GGA AGA AGA AAG GAC TGG TCC TGC TCG	AAC	GAA	GTG	GTT
GAG CCA CTG GGC	CTG	TCC	TAC AAC	TGG	ACT GTG	AAG
	GCA	TGG	၁၅၅	TCA	\mathtt{GTG}	GGA
CCC TGG ACT TCC AAG GAA	AGG	GAC	TCC TCC TTC CTC TAC GGC	GAG	CTC TGG TCT GTG	ATT
TGG AAG	999	AAG	CTC	AAT	TGG	ATG
	CCA	AGA	TTC	TAC	CTC	AAG
TGG GGT AGG AAT	999	AGA	TCC	TTT		GTG
TGG AGG	CCA	AGG	TCC	၁၁၅	ACT	ATT
AGA GTC CAA AAT	CCT	GGA	299	AAG	CTG	TTA
	999	GGT	TTC GGC	ATC	CCA GAC ACT CTG ACT CTG	ACG
GGC	၁၁၅	CCA	ეენ ენნ	TAC	GAC	999
CTT AGG	CAC	GTG	299	໑ͻͻ		GTG
GGC	AGC	999	909	ACC	GAC	CTT
TCC ATG	ACC	AGT	CTC	၁၁၁	ATA	
222	GAC	AGG	GTG GCC TCC	GTG AAT GCC CCC	CCA ATA	GGT
CAC	GAT	CTG	၁၁၅	AAT	GGA CCT	ATC
TCG ACC CAC GCG	CTC ACA GAT GAC ACC	GAC CAC CTG AGG AGT	GTG	\mathtt{GTG}	GGA	TTC GCC ATC GGT GGA
TCG	CTC	GAC	CTC	GTG	CAT	TTC

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Applicants: Louis A. Tartaglia and Xun Weng
Figure 1B of 4

ACG TTC	IG. 1B
CAA A	ш
TTC	
CCC	
AAA	
\mathtt{GTG}	
GCT	
AGA	
GCA	
GAG	
AAC	
CAC	
AAG	
GAG	
TTG	
CTC	
CTG	
TAC	
၁၅၁	

၁၁၅	ATA	GAG	999	GGA	CCA	
ATG	299	AAG	ACT	TTT	AGC	
CTG		၁၁၁	TTC	CTG	GAC	
TTG	ATC	TCA	GTG	TAC	ອວວ	
	CGC TTC ATC ATG	ATC		CCA	CTC	
GCT GCA	၁၅၁	GAG ATC	ATT	TGG	TTT	
TCT	GGA	AGT	TGC			
GCC AAT AAȚ GGG TTT GCA ATT	GTG GGA	CTC AGT	GTG ACT GCC ATC TTT ATC TGC ATT GGC	AGT ACC	CTT CCC	
GCA	CTC ATT	TAC	TTT	GAG	AGC	
TTT	CTC	ATG	ATC	AAG	CTG	
999	GAA ATG	၁၁၁	၁၁၅	GGA AAG	CTG	
AAT		CTC	ACT	CTG	CAG	
AAT	TTT	GTG	GTG	CTG	GTC	
၁၁၅	၁၁၅	AGT	CAG	GAG	GTT	
CTG	GGA	CTC	999	သသ	၁၁၅	
${ m TTG}$	GCA	SSS	CTG	CTG	GTC CCT GCC	
ACT	CAG	GTC	TCT	GGC CTG	GTC	
CAC	CTC	299	၁၅၅	CTT CTG	GTG	
AGG AAG CAC ACT TTG CTG	TGC TCG CTC CAG GCA GGA	GGA GGC GTC GCC	ATC CGT GGC TCT CTG GGG		ATT	
AGG	TGC	GAT	ATC	CAG	GTG	

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Figure 1C of 4

HOWELL' KHOHOOGO

			•				
CAG	CAG	, TGG	GTC	GAG	999	ATC	ATC
GTG	\mathtt{TGG}	ATT	TAC	ATT	TTT	AGT	TTC
CAC	၁၅၁	GCA	CCA	GTC	TTC		900
AGC	GTC	AAT	ATC	TTG	CTC	TAC CTG	ATC
GAG	TAC	CTC	AAG	GGT	299	၁၁၁	ეეე
GCT GAG AGC CAC GTG	222	GGC CTC AAT GCA ATT	GCA AAG ATC CCA TAC	TCT	ATG	GTC CCC	GGT
CTG		TGT	໑ͻͻ	TTC	CTC		CCA
GTC	AGA GCT	CTC TGT	CCT	ATC GAG ACT TTG GCT GCC GTC TTC TCT GGT	ATT GGT GGC TTT GGG CTC ATG GGC	SCC TGG	AGT GGG CCA GGT GGC ATC CCG
GAG	CTG	CAG	ATC	၁၁၅	TTT	၁၁၅	AGT
GAG	CTG	TAC CAG	GGG ATC	GCT	299	CAC	TGC
GTA	GAG	TGC		TTG	GGT	GAC CAC GCC	ATC GCC TCT TTC TGC
GAG	CTG	229	AAA GCT	ACT	ATT	CAG	TCT
CAA	GTG	ATG	GGA	GAG	CTC	CTG	၁၁၅
TCC	TCC	ACC	TTT	ATC	CTC	ACC	ATC
GTT	GTG	GTC	ATC	ວອອ	$\mathcal{D}\mathcal{D}$	CTG	ATC
GAC	CTG			9 99	AGA	ACG	၁၁၅
GGT AAA GCA GAC	ວອວ	GTC ACC GTG ATT	AAC	ACA	CTG GGA CGG AGA CCC	CTC ACC ATC ACG	CTG
AAA	ATC	ACC	ACC	AGT	GGA	ACC	ATT
GGT	AGC ATC	GTC	TTC TAT ACC AAC AGC	ACC TTG AGT ACA GGG	CTG	CTC	GTG GGC ATT CTG GCC
${ m TTG}$	AGG	GTG	TTC	ACC	CAC	ACC	GTG

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Figure 1D of 4

ACC	CTG	TAT	AAA	GCT	ລວຄ	CCT
၁၅၅	AGT	CTG	TCC	CCT	ACC	TGA
GCA	AAA	TAC	TT	. LOS	ACC	GAA
ATT	CAG	ATC	GCA	GAT	ACC	CTG
ATC	ATT	GCT	CAG	ACT	329	AAC
TTC	AAC TTT GCT GTT GGG CTC CTC TTC CCA TTC ATT CAG AAA AGT CTG	CTA GTC TTT GCT ACA ATT TGT ATC ACA GGT GCT ATC TAC CTG TAT	CC AAA AAC AGA ACC TAT GCA GAA ATC AGC CAG GCA TTT TCC AAA	CCA CCA GAA GAG AAA ATC GAC TCA GCT GTC ACT GAT GCT CCT GCT	CT CCG AAT ACA GCC TGG ATT CAA GCT GCC GCC ACC ACC GCC	CA TTG TAA ACG GTC ATG TGG TAT TTC CTC AAC CTG GAA TGA CCT
၁၁၅	CCA	ACA	ATC	GCT	GCT	TTC
GCT	TTC	ATC	GAA	TCA	CAA	TAT
ဗ္ဗ	CTC	TGT	GCA	GAC	ATT	TGG
၁၅၁	CTC	ATT	TAT	ATC	TGG	ATG
CAG	999	ACA	ACC	AAA	ეეე	GTC
TCT	GTT	GCT	AGA	GAG	ACA	ACG
CAA	GCT	TTT	AAC	GAA	AAT	TAA
CAG	TTT	GTC	AAA	CCA	໑ລລ	${ m TTG}$
TIC		CTA	ACC	CCA	AC'F	CCA
TTC	TCC	TTC	GAG	TAC	ACT	
GAG	CTC	TGT	CCT GAG	GCA	TTC	GAA
GGT	TGG	TAC	CTG	AAA	CCT TTC	AAA
TTG ACT GGT GAG TTC TTC CAG CAA TCT CAG CGG CCG GCT GCC TTC ATC ATT GCA GGC ACC	GTC AAC TGG	GAC ACC TAC TGT	GTG	AGG AAC AAA GCA TAC	PCT TCT	AAA AAA GAA CAC
TTG	GTC	GAC	ŢŢŢ	AGG	TCT	ACC

LOBELT+ LACTECT

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Figure 1E of 4

FIG. 1E

AGT
AGT
GAG
CTC
ATT
GCT
GCC
TGG ACA AGA TGG GAG TTA AAT CCC CTT TTA GAG SSO CAG AAA GAG GAG TAT GGA GCA GGT AAA CAG AAA GAG CAA TGA TGT TAC AGG AGA AGC TGG GGC AAA CTG GTC TTC CAA GGA CTA TAA AGG GAT TTA ATA AGT GGT TAC GGG CAT CTT GTT TGA GTG CTC CTT AGA AGT ATT CTG GCT GAG CCT CTA CCG CCA CCA AAA GCC CTC CAG TCA TAC CTA GAG AAA TCC AGT AGA CAG TTT ATT TGG GTG TAG ATG TTC GCT CTT TCC GAA ATG GAT GCA AAC CGC CGC TTT TTT CAT AGA CCA GCT GGG SGC TTC GGG GGG GAG ATC CTG GGA ATC CAT ATG AGA GTA ATC GGT CCT
AGA
GAC
GAG
CCT
ACC
CAT AACA TCC TGG ACT AGA ACG GAG GAG GTG Date: 10/18/01

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Figure 2A of 4

pro leu val qlv len dlu lvs ser asn arg asn gln 1ysarg ala

شا

'n 5 glu len Jeu a la a Eg gly pro g1ypro pro gly مام his asp

Len ser cysser trp នីនុស្ lys arg arg arg g 1yg 1ybro

val

gly

ser

arg

len

S

hi

asb

ser len asn tyrgly tyrlen phe ser ser gly phe ala

g1y

ala

len

ser

ala

val

len

arg arg glu trp ser glu asn lys i 1.e tyr

pro

 thr

pro

ala

asn

val

gly

ser val thr val ser trp len len thr leu thr asb pro asb pro arg

gly lys val leu gly lys val ile len thr gly leu val gly gly

ala

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Figure 2B of 4

FIG. 2B

gln thr phe

bhe

ala

val lys

ala

arg

ala

glu

asn

his

glu

len

len

tyr leu

arg

alu. pro g1yglygly 1ysthr phe ser met pro leu met phe asp ile ser val tyr pro leu pro phe i.le gly len ala glu trp phe ala arg ile pro ser ser ഗ g1yÇ ile val leu ile len ser ile tyr glu ala phe ser phe len met ile len pro gly gly met ala len glu len asn thr len gln val asn phe len gln val val glu ala ala ser val len leu gly pro ala gly leu len ala ala len pro thr gln ser his len gly gly 1ysser g1yarg asb cys val

 Jucleic Acid Molecules Encoding GLUTX and Uses

Filmg Date: 10/18/01

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gln

val

Ŋ

hi

ser

ala

len

val

val

ala

pro phe ile

qln trp val i 1 e trp tyrpro arg ala ile val asn glu tyrlen lys pro g1yala cys ala pro len pro arg glu gln len ile glu leu glu tyrcysala glu len ala gln val met glyser thr phe ser val val len ile asp ser arg val thr lys Φ thr gly val ser len val phe arg

val

len g1yser

phe

ala

ala

len

chr

glu

i.1e

gly

leu

chr

d lu

phe

len gly

g1y

phe

len

glγ

phe

gly

gly

ile

len

len

pro

arg

arg

leu

his

tyr pro val trp pro ala Ø hi asp gln

len

thr

len

thr

ile

thr

ile

ser

len

ile g1ygly pro ser Ø ζ ser Ø ala Ψ ala

len

val

gly

, , , , , ,

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Figure 2D of 4

ala ala tyrleu ser pro thr bhe ala thr a al ala ile ile asp i] a ala ile ala gln thr phe ગાત glyval ala ser pro ala thr Ø Ø 1,16 ale alg glu ile phe gln ala ser len ile pro asb ala Ø $\frac{1}{2}$ len trp arg ile tyrΦ gln lys thr thr glu thr ser Val ala arg gln glu asn phe asn ala gln pro val pro phe ທ 17 asn pro phe leu thr thr phe phe glu tyrthr ser glu len cys pro ala phe gly trp len pro leu thr val asn ser phe ser asp va]

FIG. 2D

thr lys lys glu his pro leu

Title: Nucleic Acid Molecules Encoding GLUTX and Uses Thereof Filing Date: 10/18/01 prney Docket No. MPI1998-021DV3(M) pplicants: Louis A. Tartaglia and Xun Weng Figure 3A of 4

<u> </u>			Majority
10		20	30
M C F S K L G K M D G K S K M M G T T E P S G F Q Q I G S M E Q Q D Q S M K E M A R K - O N R N S	ED		glut1 glut2 glut3 glut4 glut5
		V T G T L	V L A Majority
40)	50	60
GRALLECDHL		K V T T P I P Q Q R V T G T I	IFA glut3 VLA glut4 Ala A glut5
VLIAALGS - F	OACANFGA	INAPOKVI	EAFY Majority
70)	80	90
V F T A V L G F - F I S I A T I G S - F V F S A V L G S - L T L I A A F G S S F S L A G A F G S S F	CQFGYNTGV QFGYNIGV CQFGYNVAA	INAPEAIII INAPOKVII VIISPALLMO	(D - F glut3 EQSY glut4 DOFY glut5
			<u></u> Majority
10	00	110	120
GRMLGAIPMV	/ R H A T N T S R	DNATITVT	glut1 P G T glut2 L glut3
7			N glut4 glut5 GlutX
N	<u> </u>		glut5 GlutX
N ETWLGRXGEN	<u>{ - ? \$</u>	V - P - T L	glut5 GlutX
N ETWLGRXGEN	BO	140 	glut5 GlutX L L W Majority 150 glut1 F M Y W glut2 F S L W glut3 F T L W glut4 F L L W glut5
ETWLGRXGEY 13 FAVGSSEGT NYTLEERSET ETWLGRQGPE ETYYGRTGEE SVERRHGRE	30 LAPSAGFED PPSS EGPSS GPSS	140	glut5 GlutX L L W Majority 150 glut1 F M Y W glut2 F S L W glut3 F T L W glut4 F L L W glut5 F L L W GlutX R K X A Majority
ETWLGRXGEY 13 FAWGSSEGTE NYTLEERSET ETWLGRQGPE ETYYGRTGEE SVERRHGRE	BO LAPSAGFED PPSS EGPSS	140	glut5 GlutX L L W Majority 150 glut1 F M Y W glut2 F S L W glut3 F T L W glut4 F L L W glut5 F L L W GlutX

FIG. 3A

Title: Nucleic Acid Molecules Encoding GLUTX and Uses Thereof Filippote: 10/18/01
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Figure 3B of 4

MLVNNVLAIAGGLLMG	LAKXAXSF	EMLILG Majority
190	200	210
M L V V M V L S I A G N L L M G M L I V H L L A I A G G C L M G M L V N N V L A V L G G S L M G L L F N N I F S I V P A I L M G L L A N N G F A I S A A L L M A	LAKMGPDH FCKIAESV LANAAASY CSRVATSF CSLQAGAF	E M L I L G glut4 E L I L I S glut5 E M L I V G GlutX
RFIIGLYCGLSSGVYP	MYVGEISP	T A L R G A Majority
220	230	240
R L L V G I C A G V S S N V V F R F I M G I ⊃ G G V A L S V L F	MYVSEVEP MYIGEISP MYVGETAP MYLGELAE MYLSETSP	TALRGA glut3 THIRGA glut4 KNIRGA glut5 KEIFGS GlutX
LGTLNOLGIVIGILIA	QVLGLDSL	LGNESL Majority
250	260	270
FGTLNQLGIVIGILVI LGTINQLAIVIGILI LGVVPOLFITVGILVI LGQVTAIFICIGVFT	G Q V I, G L D F I, Q I F G L K V I Q Q I F G L E S L Q I F G L R N I, G O L I, G I, P E I,	L G T E D L glut3 L G T A S L glut4 L A N V D G glut5 L G K E S T GlutX
WPLLLGLTGVPALLOI	•	
280	290	300
WPLLLGLTVLPALLQ WPILLGLTGVPAALQ WPYLFGVIVVPAVVO	FFILLLCPE CAALPFCPE LVLLPFCPE LLILPFFPF LISIPFLP	SPRYLY glut3 SPRYLY glut4 SPRYL Glut5 SPRYL GlutX
INKNEEARAKKALQR	LRGTADVSC	
310	320	330
IKLGKVEEAKKSLKKINRKEEKAKEILORIIONLEGPARKSLKF	LWGTEDVAC LTGWADVS	CHIAEME glut2 DDIQEMK glut3 GVLAELK glut4 REVAEIR glut5
DESRXMXSEKXVSVL	ELFRSRXY	•
340	350	360
EESRQMMREKKVTII KEKQEAASEKRVSIG DESMRMSQEKQVTVL DEKRKLERERPLSLL QEDEAEKAAGFISVL AESHVQRSIRLVSVI	Q L F S S S K Y E L F R A P N Y Q L L G S R T H K L F R M R S L	ROPLITA glut4 RWQLLSI glut5

FIG. 3B

Title: Nucleic Acid Molecules Encoding GLUTX and Uses Thereof
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IVLQLSQQLSGINAVFYYSTSIFEKAGVGO Majority
370 380 390
167 VVLQLSQQLSGLNAVFYYSTSIFEKAGVQQ giut1-pro 320 LMVQISQQFSGINAIFYYSTNIFQRAGVGQ giut2-pro 274 IMLQLSQQLSGINAVFYYSTGIFKDAGVG Q giut3-pro 292 VVLQLSQQLSGINAVFYYSTSIFFTAGVG Q giut4-pro 282 IVLMGGQQLSGVNAIYYYADQIYLSAGVPE giut5-pro 321 IVTMACYOLCGLNAIWFYTNIIFGEACIPP Glutx-pro-
final-2/6/98
PVYATIGAGVVNTVFTVVSVFVVERAGR Majority
400 410 420
197 P V Y A T I G S G I V N T A F T V V S L F V V E B A G R glut1-pro 350 P T Y A T I G V G V V N T V F T V I S V F L V E K A G R glut2-pro 304 P V Y A T I G A G V V N T I F T V V S V F L V E K A G R glut3-pro 322 P A Y A T I G A G V V N T V F T L V S V L L T E R A G R glut4-pro 312 E H V Q Y V T A G T G A V N V V M T F C A V F V V E L L G R glut5-pro 351 A K I P Y V T L S T G G I E T L A A V F S G L V I F H L G R GlutX-pro- final-2/6/98
RTLHLLGLGGMAGCAVLMTIALALLDQVPW Majority
430 440 450
225 RTLHLIGLAGMAGCAVLMTIALALLEQLPW glut1-pro 378 RSLFLAGLMGMLISAVAMTVG:VLLSQFAW glut2-pro 332 RTLHLIGLGGMAFCSILMTTSLLLKDNYSW glut3-pro 350 RTLHLLGLAGMCGCAILMTVALLLERVPA glut4-pro 342 RLLLLLGFSICLIACCVLTAALALQDTVSW glut5-pro 381 RPLLIGGFGLMGLFFGTLTTTTTTTLQDHAPW Glutx-pro- final-2/6/98
MSYVSIVAIFGFVAFFEVGPGPIPWFIVAE Majority
460 470 480
255 MSYLSIVAIFGFVAFFEVGPGPIPWFIVAE glut1-pro 408 MSYVSMVAIFLFVIFFEVGPGPIPWFIVAE glut2-pro 362 MSFICIGAILVFVAFFEIGPGPIPWFIVAE glut3-pro 380 MSYVSIVAIFGFVAFFEIGPGPIPWFIVAE glut4-pro 372 MPYISIVCVISYVIGHALGPSPIPALLITE glut5-pro 411 VPYLSIVGILAIIASFCSGPGJPFILTGF GlutX-pro- final-2/6/98
LFSQGPRPAAIAVAGFSNWTSNFIVGLLFQ Majority
285 LFSQGPRPAAIAVAGFSNWTSNFIVGMCFQ glut1-pro 438 LFSQGPRPAAIAVAGFCNWACHFIVGMCFQ glut2-pro 392 LFGQGPRPAAMAVAGCSNWTSNFLVGLLFP glut3-pro 410 LFSQGPRPAAMAVAGFSNWTSNFILVGLLFP glut3-pro 402 IFLQSSRPSAFMVGGSVHWLSNFTVGLIFP glut5-pro 441 FFQQSQRPAAFIIAGTVWLSNFTVGLLFP GlutX-pro- final-2/6/98 YIAELLGPYVFIVFAVLLLLFFIFTFLKVP Majority
520 530 540 315 Y V E Q L C G P Y V F I I F T V L L V L F F I F T Y F K V P glut1-pro 468 Y I A D I C G P Y V F V V F A V I L L V F F L F A Y I K V P glut2-pro 422 S A T F Y I G A Y V F T V F T V F L V I F W V F T F F K V P glut3-pro 440 Y V A E A M G P Y V F L L F A V I I L G F F I F T F L R V P glut4-pro 432 F I Q F G L G P Y S F I V F A V I C I I T T I Y I F I I V P glut5-pro 471 F I Q K S I D T Y C F L V F A T I C I T G A I Y L Y F V L P GlutX-pro- final-2/6/98

FIG. 3C

- - - -- - - - Tit cleic Acid Molecules Encoding GLUTX and Uses 7

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Figure 3D of 4

RKXNKX - EQ - PEKESI Majority 560 570 550 TFDEIASGFRQGGA--SO-SDKTPE glut1 T K G K S F E E I A A A F R R K K L P A K - - - - - - - 5 M glut2
T R G R T F E E I T R A F E G Q V Q T G T R - G E K G P T glut3
T R G R T F D Q I S A A F H E T P S L L E O - E V K P S T glut4
T K A K T F I E I N Q I F T K M N K V S E V Y P E K E E L glut5
T K N R T Y A E I S Q A F S K R N K A - - - Y P P E E K T GlutX EELEPLGPD - -- <u>- -</u> Majority 600 580 590 FLFHPLGAD glutl ELEDIRGG glut2 MEMNSIQPT EL-EYLGPD KELPPVTSEglut5 D S A V T D A P A S S P F T T P N T A W I Q A A A T T T A T - - E - - X -Majority SOV. glut1 - E A giut2 KDTNA glut3 glut4 glut5 KKEHPL. GlutX

FIG. 3D

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